

REMARKS

Applicant respectfully requests consideration of the subject application as amended herein. This Amendment is submitted in response to an Office Action mailed on October 6, 2004. Claims 13, 17-22 and 27-31 are rejected. No new matter has been added by this Amendment.

35 U.S.C. § 102(e)

Claims 13, 18, 19, 21, 22, 27, 30, and 31 are rejected under 35 U.S.C. § 102(e) as being anticipated by Suzuki (U.S. Patent No. 6,232,638, hereinafter “Suzuki”). Applicant respectfully disagrees.

Suzuki did not teach, disclose, or even suggest each and every element of claims 13, 18, 19, 21, 22, 27, 30, and 31.

As can be seen from Suzuki ‘638, the recess (116a) of Suzuki ‘638 is formed between TWO ISOLATION REGIONS (102) and NOT between an emitter stack and a first isolation structure as recited in Applicant’s claim 1. As recited in Applicant’s claim 13, 18, 19, 21, 22, 27, 30, and 31, the emitter stack is disposed between the first and second isolation structures; and in the substrate, a recess is disposed adjacent and between the emitter stack and the first isolation structure, wherein the recess exposes a collector tap. The recess 116a of Suzuki ‘638 is disposed between two isolation regions 102 as can be seen from Figure 1 of Suzuki ‘638. This was not taught, disclosed, or even suggested by Suzuki ‘638. The recess 116a of Suzuki ‘638 is not adjacent the emitter stack.

Additionally, with regard to claims 18-19, Suzuki ‘638 did not teach an epitaxial layer disposed below the emitter stack. The emitter stack 114 in Suzuki ‘638 is formed on the substrate 101 and not on any epitaxial layer. On the other hand, in Applicant’s

invention, there is an epitaxial layer (e.g., the epitaxial layer 124) disposed directly below the emitter stack.

Additionally, Applicant respectfully emphasizes that Suzuki '638 did not teach a self-aligned recess disposed between the emitter stack and the first isolation structure. The only thing in Suzuki '638 that can even be said to be similar to the recess is the collector trench 116 or 216 (Figures 1 and 4a and Figures 7-9). As can be seen from Suzuki '638, the trench 116/216 is physically separated from the emitter stack by a dielectric region, the isolation oxide region 102 or 202. Thus, contrary to the Examiner's misunderstanding, the trench is not disposed between the emitter stack and the first isolation structure as claimed in Applicant's claims.

Additionally, in Applicant's claim 1, the trench, or recess 138, is flushed against the emitter and is not separated from the emitter by the isolation structure. The recess 138 is formed adjacent to the emitter stack as can be seen from the Figures of Applicant's Application. In fact, the recess 138 is placed between the emitter stack and the first isolation structure. See for example, Figures 3-5 of Applicant's disclosure. The recess 138 is thus self-aligned (or automatically aligned) with the emitter stack. In Suzuki '638, there is no such self-aligned recess and furthermore, the collector trench 116 is separated from the emitter stack by the isolation oxide region 102 and is thus not self-aligned. An advantage of Applicant's feature as claimed in claim 1 is that the device can be made smaller with lower resistance as discussed in Applicant's disclosure, for example, on page 9 beginning with line 4.

Therefore, Suzuki '638 cannot make claims 13, 18, 19, 21, 22, 27, 30, and 31 not patentable.

35 U.S.C. § 103(a)

Claims 20, 28, and 29 are rejected under 35 U.S.C. § 103(a) as being obvious over Suzuki.

Applicant respectfully disagrees for the same reason stated in the above discussion. As discussed above, Suzuki '638 does not teach a recess disposed adjacent and between the emitter stack and the first isolation structure. Suzuki's recess is between two isolation regions. Thus, one of ordinary skill in the art would have derived to the device as described in claims 20, 28, and 29 using Suzuki. Therefore, Suzuki '638 does not make obvious Applicant's claims 20, 28, and 29.

Claim 17 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Suzuki in view of U'ren (U.S. Patent No. 6,365,479, hereinafter "U'ren").

Applicant respectfully disagrees for the same reason stated in the above discussion. As discussed above, Suzuki '638 does not teach a recess disposed adjacent and between the emitter stack and the first isolation structure. Suzuki's recess is between two isolation regions. Thus, one of ordinary skill in the art would have derived to claim 17 by combining Suzuki and U'ren.

Applicant respectfully submits that at least for the reason above, Applicant's invention is patentable over the cited references.

Deposit Account Authorization

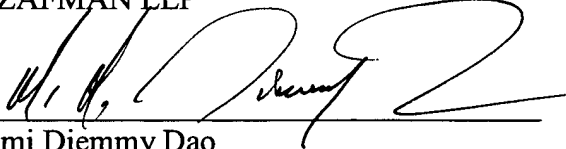
Authorization is hereby given to charge our Deposit Account No. 02-2666 for any charges that may be due. Furthermore, if an extension is required, then Applicant hereby requests such extension.

If the Examiner determines the prompt allowance of these claims could be facilitated by a telephone conference, the Examiner is invited to contact Mimi Diemmy Dao at (408) 720-8300.

Respectfully submitted,

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